Claims:

1. Apparatus for processing thermoplastic synthetic material that has to be recycled, comprising a first and a second receptacle (1, 2) for the material to be processed, in which receptacles (1, 2) tools (21) circulating around vertical axes are provided for mixing and heating the material, wherein at least two tools (21) each circulate in different levels one above the other, and the material reaches the second receptacle (2) that is connected to an evacuating means (9) from the first receptacle (1) through a connecting conduit (3), and wherein the first receptacle (1) has above an intake opening (19) for the material to be processed, which opening is disposed at a higher level then the highermost tools (21) circulating within this receptacle (1), and a discharge opening (49) of the second receptacle (2) is disposed at least substantially at the level of the lowermost tools (21) circulating in this receptacle (2), and the mouth of the connecting conduit (3) in the second receptacle (2) is disposed at a higher level than the tools (21) circulating in this receptacle (2), and wherein the processed material is carried off the second receptacle (2) through the discharge opening (49) by means of at least one screw (47), whereby this receptacle (2) is vacuum-tightly closed, and the first receptacle (1) is also connected to an evacuating means (9), characterised in that to the intake opening (19) of the first receptacle (1) a sluice (6) is connected and that in both receptacles (1, 2) the tools (21) are mounted on disc-shaped tool carriers (22) disposed one above the other, and that in each one of the two receptacles (1, 2) at least one temperature sensor (32) is provided for each level of the circulating tools (21), which sensor is disposed higher than the level associated to it.

2. Apparatus according to claim 1, characterised in that the evacuating means (9) is equipped for creating different vacuum conditions in the two receptacles (1, 2) and a transfer sluice (56) is disposed in the connecting conduit (3).

3. Apparatus according to claim 2, characterised in that the evacuating means (9) comprises at least one vacuum pump (14, 44) for each one of the receptacles (1, 2).

4. Apparatus according to any of claims 1 to 3, characterised in that a control means (16, 46) for the vacuum within the respective receptacle (1, 2) is connected to each one of the receptacles (1, 2), which control means adjustably controls the vacuum in the respective receptacle (1, 2).

5. Apparatus according to any of claims 1 to 4, characterised in that on at least one of the tool carriers (22) the disc edge (65) is upwardly bent like a plate.

6. Apparatus according to any of claims 1 to 5, characterised in that the temperature sensors (32) are connected to means (34, 41) for controlling the circulation of the tools (21).

7. Apparatus according to any of claims 1 to 6, characterised in that each one of the evacuating means (9) comprises a dust separator (66).

8. Apparatus according to any of claims 1 to 7, characterised in that the screw (47) constitutes a member of an extruder (62).

9. Apparatus according to claim 8, characterised in that a double screw extruder is connected to the discharge opening (49).

10. Apparatus according to any of claims 1 to 9, characterised in that to the discharge opening (49) a housing (48) of the screw (47) is connected, which housing comprises at least one de-gassing opening (52) to which preferably a vacuum pump (54) is connected.

11. Apparatus according to any of claims 1 to 10, characterised in that each temperature sensor (32) is disposed within the receptacle (1, 2) at least substantially at a level that is in the region in which the mixing cone (30) leaves the sidewall (31) of the receptacle (1, 2).

12. Apparatus according to any of claims 1 to 11, characterised in that the sluice (6 or 56) is a vacuum sluice.